

Patent Claims

1. An optical transmitter and/or receiver assembly comprising
- 5 - at least one transmitter component (2) and/or
 - at least one receiver component (3, 4) and also
 - a planar optical circuit (5) with at least one integrated waveguide (51),
 - light from the transmitter component (1) being
 - 10 coupled into a waveguide (51) of the planar optical circuit (5) and/or
 - light being coupled out from the waveguide (51) of the planar optical circuit (5) and being guided onto the receiver component (3, 4),
 - 15 characterized by
 - a lens (14, 15) for optically coupling the at least one waveguide (51) of the planar optical circuit (5) to an optical fiber that can be fixed to the transmitter and/or receiver assembly (1), the lens (14, 15) being
 - 20 arranged on the planar optical circuit (5).
2. The circuit arrangement as claimed in claim 1, characterized in that the lens (14) is arranged in a cutout (13) on the surface of the planar optical
- 25 circuit (5).
3. The circuit arrangement as claimed in claim 2, characterized in that the cutout (13) is formed in the shape of a pyramid, in particular in the shape of a
- 30 truncated pyramid.
4. The circuit arrangement as claimed in claim 2 or 3, characterized in that the lens (14) is a spherical lens.

- 16 -

5. The circuit arrangement as claimed in claim 1, characterized in that the lens (15) is arranged at the end side on an end area (55) of the planar optical circuit (5).

5

6. The circuit arrangement as claimed in claim 5, characterized in that the lens (15) is fixed to the end area (55) of the planar optical circuit (5) by means of an index-matched adhesive.

10

7. The circuit arrangement as claimed in claim 5 or 6, characterized in that the lens (15) is formed as a planoconvex lens and the plane side (15a) is fixed to the end area (55) of the planar optical circuit (5).

15

8. The circuit arrangement as claimed in at least one of the preceding claims, characterized in that the at least one receiver component (3, 4) in each case detects light having a different wavelength and the waveguide (51) in each case has coupling-out and deflection means (91, 92, 8) which couple out the received light for each received wavelength wavelength-selectively from the plane of the planar optical circuit (5) and guide it onto the assigned receiver component (3, 4).

20

25

9. The circuit arrangement as claimed in claim 8, characterized in that the coupling-out and deflection means are in each case formed by a Mach-Zehnder component (91, 92) and an assigned deflection prism (8), light having a specific wavelength being coupled out from the waveguide (51) by the Mach-Zehnder component (91, 92), being fed to the deflection prism (8) and being deflected by the latter onto the receiver component (3, 4).

30

35

- 17 -

10. The circuit arrangement as claimed in claim 8, characterized in that the coupling-out and deflection means are in each case formed by a wavelength-selectively coated mirror area which interrupts the waveguide of the planar optical circuit under consideration in an oblique arrangement and couples out light having a specific wavelength from the waveguide, while it is transparent to light having other wavelengths.

10

11. The circuit arrangement as claimed in at least one of the preceding claims, characterized in that the planar optical circuit (5) is arranged on the top side of a substrate (6).

15

12. The circuit arrangement as claimed in claim 11, characterized in that the at least one transmitter component (2) and the at least one receiver component (3, 4) are arranged on the underside of the substrate (6).

20

13. The circuit arrangement as claimed in claim 12, characterized in that the transmitter component (2) and/or the receiver component (3, 4) are formed as prefabricated housed modules that are mounted on the underside of the substrate (6).

25

14. The circuit arrangement as claimed in at least one of the preceding claims, characterized in that the transmitter and/or receiver assembly (1) has a housing (10) having a receptacle opening (11) for the coupling of an optical fiber.

30